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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/561,067

12/16/2005

Jean-Marie Galpin

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1886

35301

7590

02/11/2008

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EXAMINER

LIN, KUANG Y

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

02/11/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/561,067	<b>Applicant(s)</b> GALPIN ET AL.	
	<b>Examiner</b> Kuang Y. Lin	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 7-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

Art Unit: 1793

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 7-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 7-108,355 and further in view of JP 2000-52,006 for the same reasons as set forth in the last office action.

Namely, JP '355 substantially shows the invention as claimed except that it does not show the detailed structure of the EM stirring means. However, JP '006 shows to use an EM stirring means with poles of tapered end to reduce the leakage flux in the EM stirring means. It would have been obvious to use the tapered poles of JP '006 in the EM stirring means of JP '355 to reduce the leakage flux. With respect to claim 9, it would have been obvious to provide a heat shield to a metallurgical structure element wherever it deemed necessary to shield the heat from the molten metal.

With respect to claim 12, US 4,834,168 and 4,256,156 show that feature to be conventional. With respect to claims 13 and 14, it would have been obvious to obtain the optimal pole structure through routine experimentation.

4. Applicant's arguments filed Dec. 28, 2007 have been fully considered but they are not persuasive.

a. Applicant in page 2, 3<sup>rd</sup> and 4<sup>th</sup> para. of the response stated that JP '006 fails to teach or suggest an "inwardly salient pole tooth". However, in figure 2 of JP '006 the pole teeth do extend beyond the coil 6. It also noted that in figure 1 of the instant invention the extent of the uncovered portion of the pole teeth extended beyond the covered portion thereof is similar to that of figure 2 of JP '006. Thus, JP '006 does teach an "inwardly salient pole tooth".

b. Applicant in page 3, 2<sup>nd</sup> through 5<sup>th</sup> para. of the response stated that the intention of JP '006 is to cover the whole magnetic pole in order to generate large magnetomotive force. However, in page 2 of the translation of JP '006 (see [0010]) it states that the distance which connects the magnetic pole point angles of adjacent magnetic pole 7' is short, magnetic flux concentrates on the magnetic path of this part, it becomes leakage flux 13, and there is little molten steel penetration magnetic flux 12. Thus, the inventors of JP '006 realize that a longer distance between the poles (i.e. the tapered pole tip) will reduce the flux leakage. Nevertheless, they cover the entire pole with the exciting coil to further reduce the flux leakage. In short, JP '006 realize to form a tapered pole tip such that to reduce the flux leakage. If this is the only modification which JP '006 would make

from the embodiment shown in figure 6, the configuration of the pole would be same as that of instant invention. However, JP '006 further improves its stirring apparatus by extending the coil to cover the tapered portion to generate a larger magnetomotive force. The further improvement from the simple tapering feature to a structure to improves a magnetomotive force does not render the simple tapering feature unobvious.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuang Y. Lin whose telephone number is 571-272-1179. The examiner can normally be reached on Monday-Friday, 10:00-6:30,.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kuang Y. Lin/  
Primary Examiner, Art Unit 1793

2-5-08